

Infrastructure in 2023 (and beyond)

Presentation to the Customer Review Panel

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April 5, 2017



Agenda

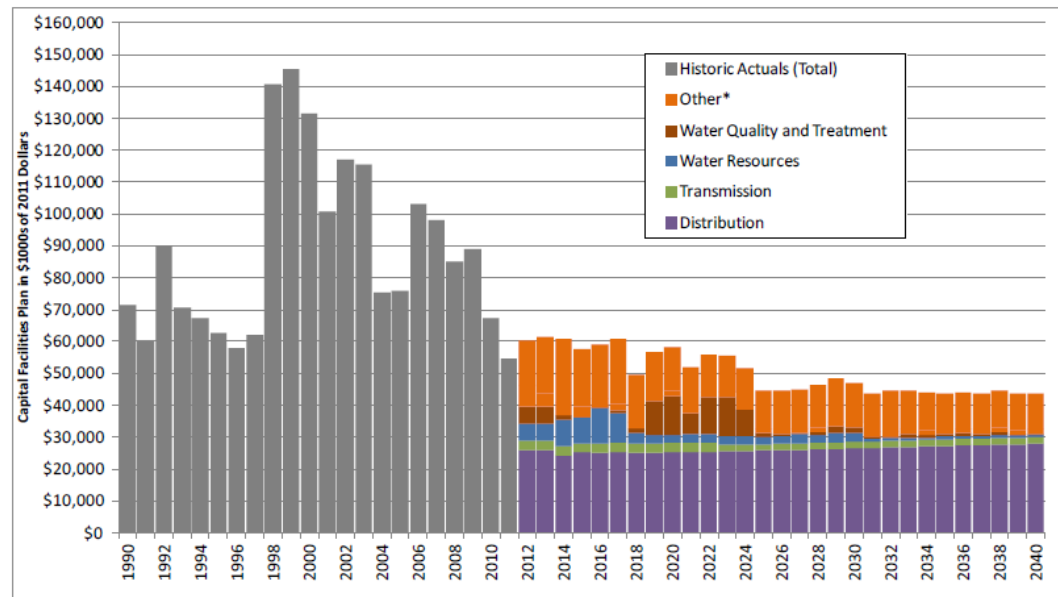
- **How do we plan over the long term?**
- **Water**
 - Future plans
 - Next 6 years
 - Where will we be after that?
- **Drainage & Wastewater**
 - Future plans
 - Next 6 years
 - Where will we be after that?

CIP Planning

- **Water System Plan, required by regulators**
 - Every 6 years
 - Establishes long-term (decades) CIP spending plan
- **We use “asset management”**
 - A structured way of planning for the long term

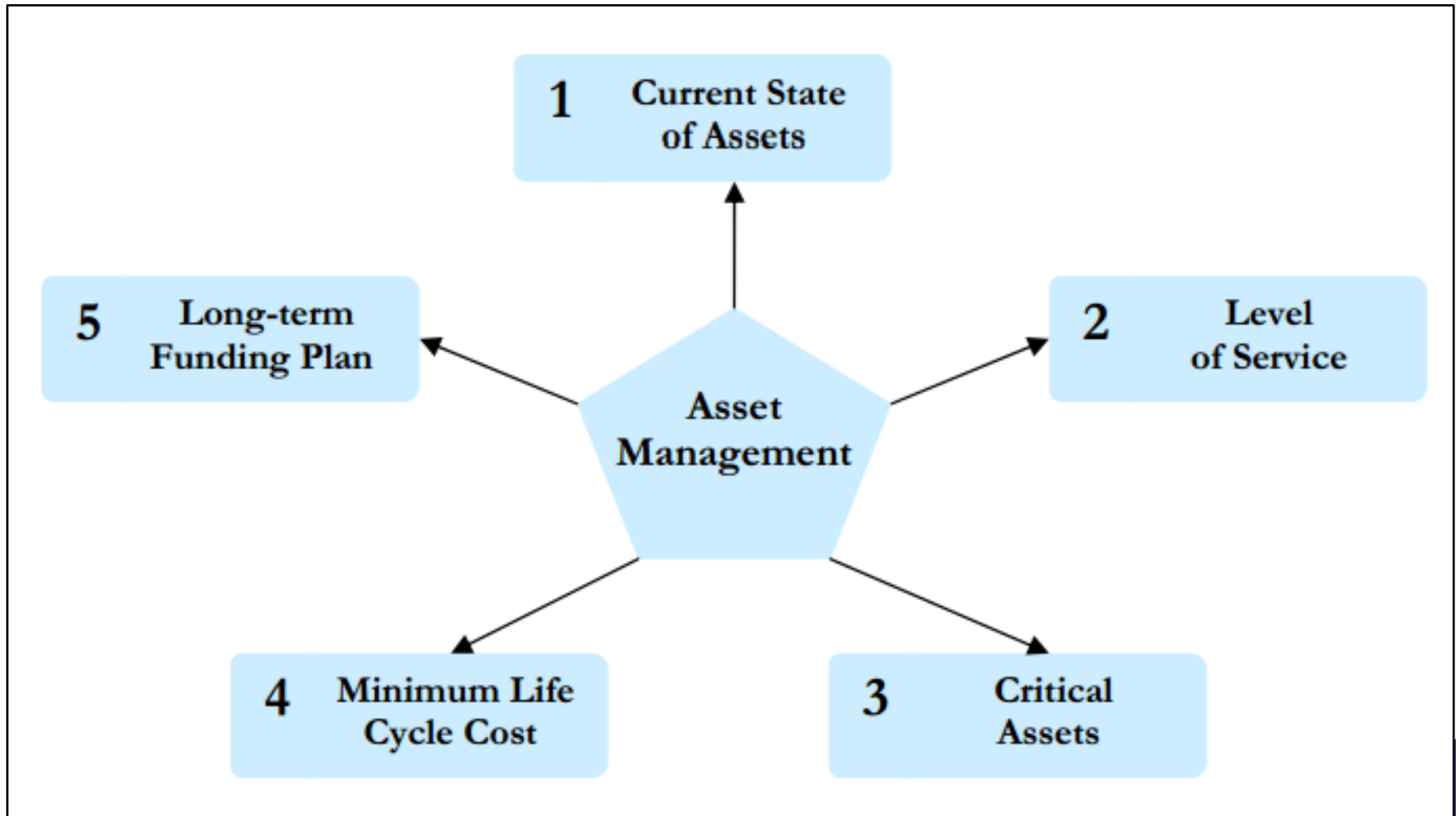
*From 2013
Water System Plan*

Historic and Proposed Capital Facilities Plan Spending through 2040
(2012-2017 Adopted CIP, plus 2018 Estimate, in thousands of 2011 dollars)



* Other includes Major Watersheds, Fleets, Facilities, Security, Information Technology, SCADA and other miscellaneous projects.

Asset Management



Asset Management

- **Discrete assets are easier to manage**
 - Reservoirs, dams, treatment plants, buildings, pump stations
 - Regular inspections provide good data for analysis
- **Distributed assets are much more complex**
 - Water mains of all sizes
 - Hydrants, valves, service lines
 - Not always easy to inspect

Discrete Assets

Asset	Condition	Certainty	Notes
Cedar Watershed Reservoirs and Dams			
Tolt Watershed Reservoirs and Dams			
Lake Youngs Reservoir and Dams			<i>Cascades Dam</i>
Transmission-Area Buildings			<i>Older buildings</i>
In-Town Buildings			<i>Older buildings</i>
Action Plan 10 Buildings			
Water Treatment Plants			
Concrete Reservoirs (Treated Water)			
Steel Water Tanks and Standpipes			<i>Coatings, seismic</i>
Water Pump Stations			

Distributed Assets

Asset	Condition	Certainty	Notes
Cedar Watershed Transportation System			
Tolt Watershed Transportation System			
Water Transmission Pipes and Appurtenances			<i>More inspection needed, difficult</i>
Water Distribution Pipes			<i>Cannot inspect easily</i>
Action Plan 2 (and refer to next slides)			<i>More inspection needed, difficult</i>
Water Meters (Wholesale and Retail)			<i>Testing frequency</i>
Water Valves			<i>Deferred maintenance</i>
Water Hydrants			<i>Deferred maintenance</i>

Action Plan 3

Discrete Assets – Treated Water Storage

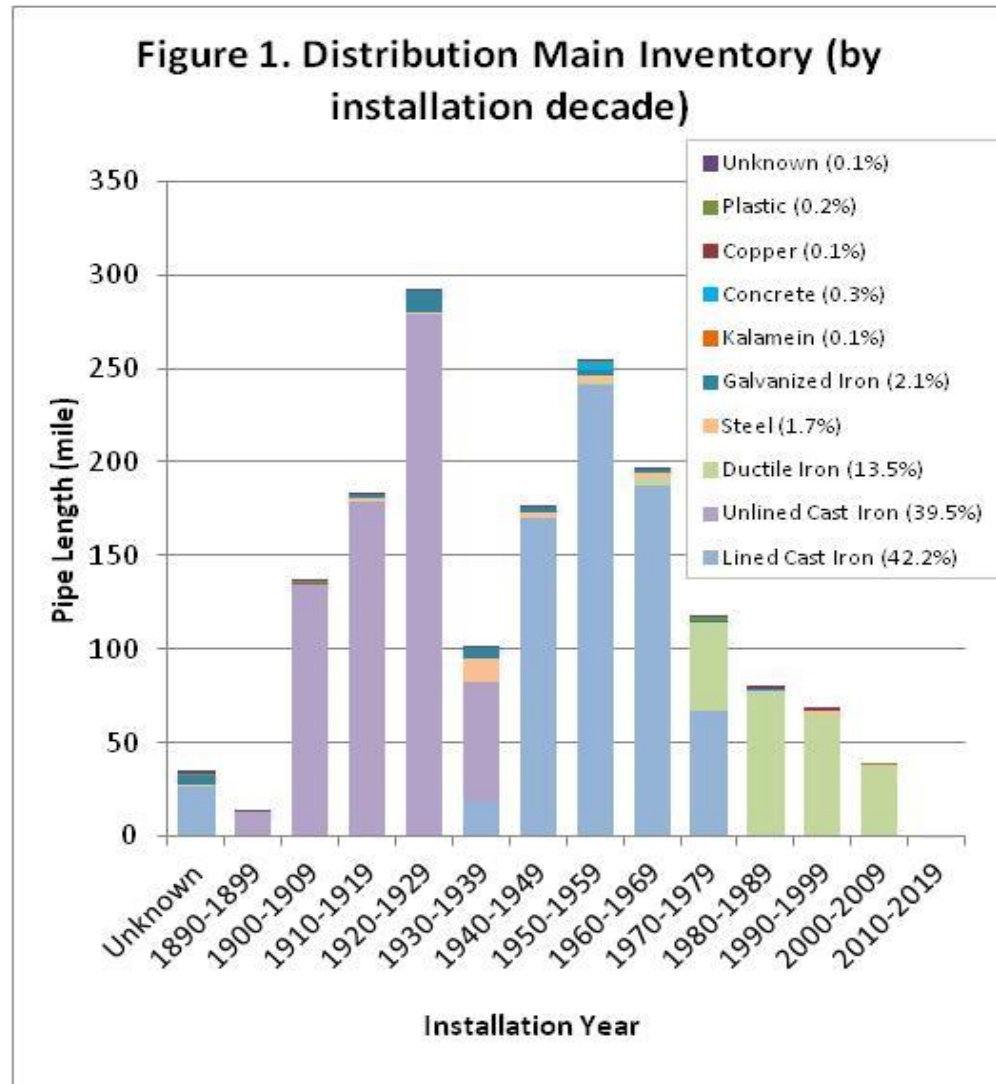
- **Elevated steel storage – tanks and standpipes**



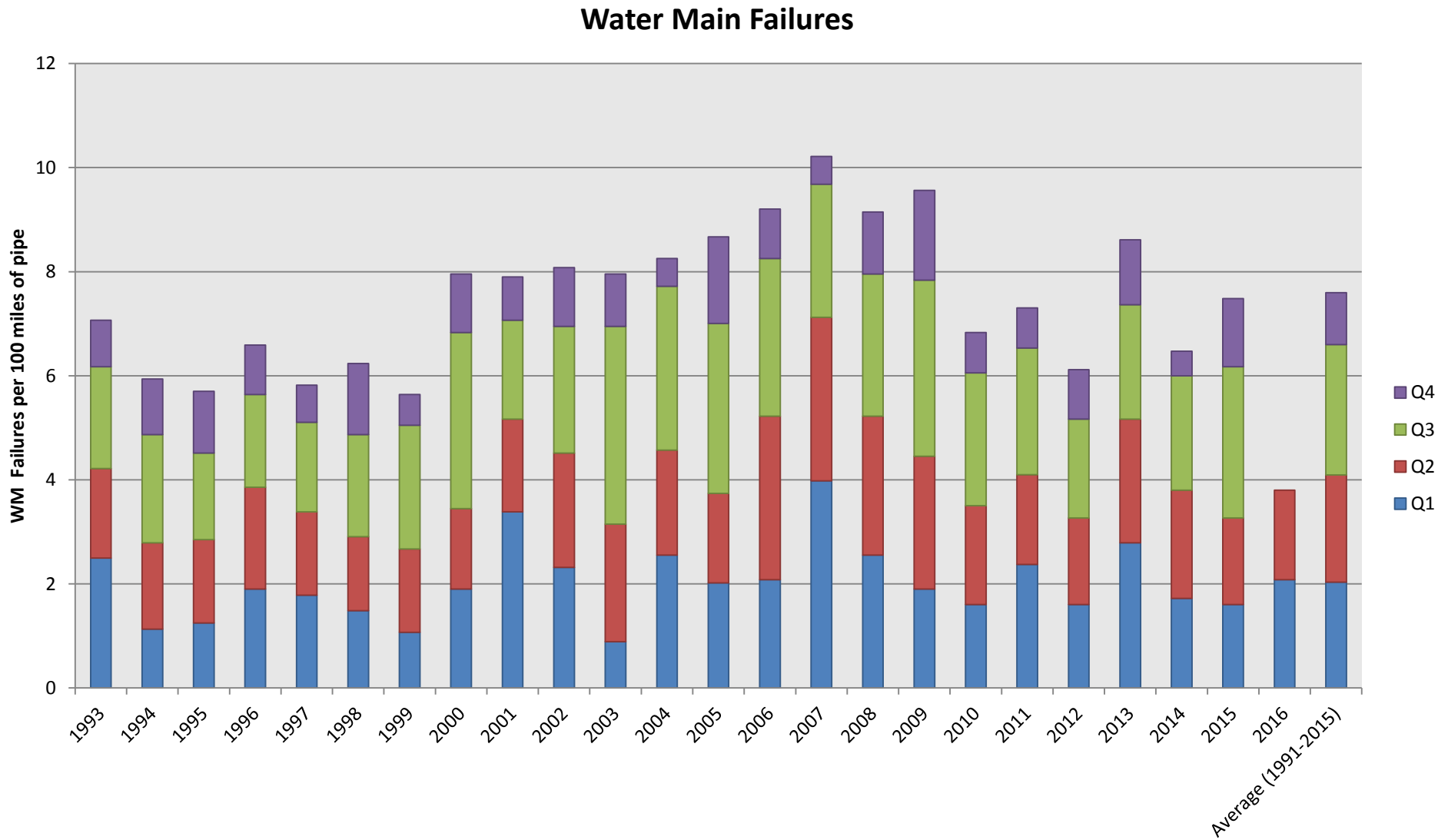
- **Ground level concrete reservoirs**



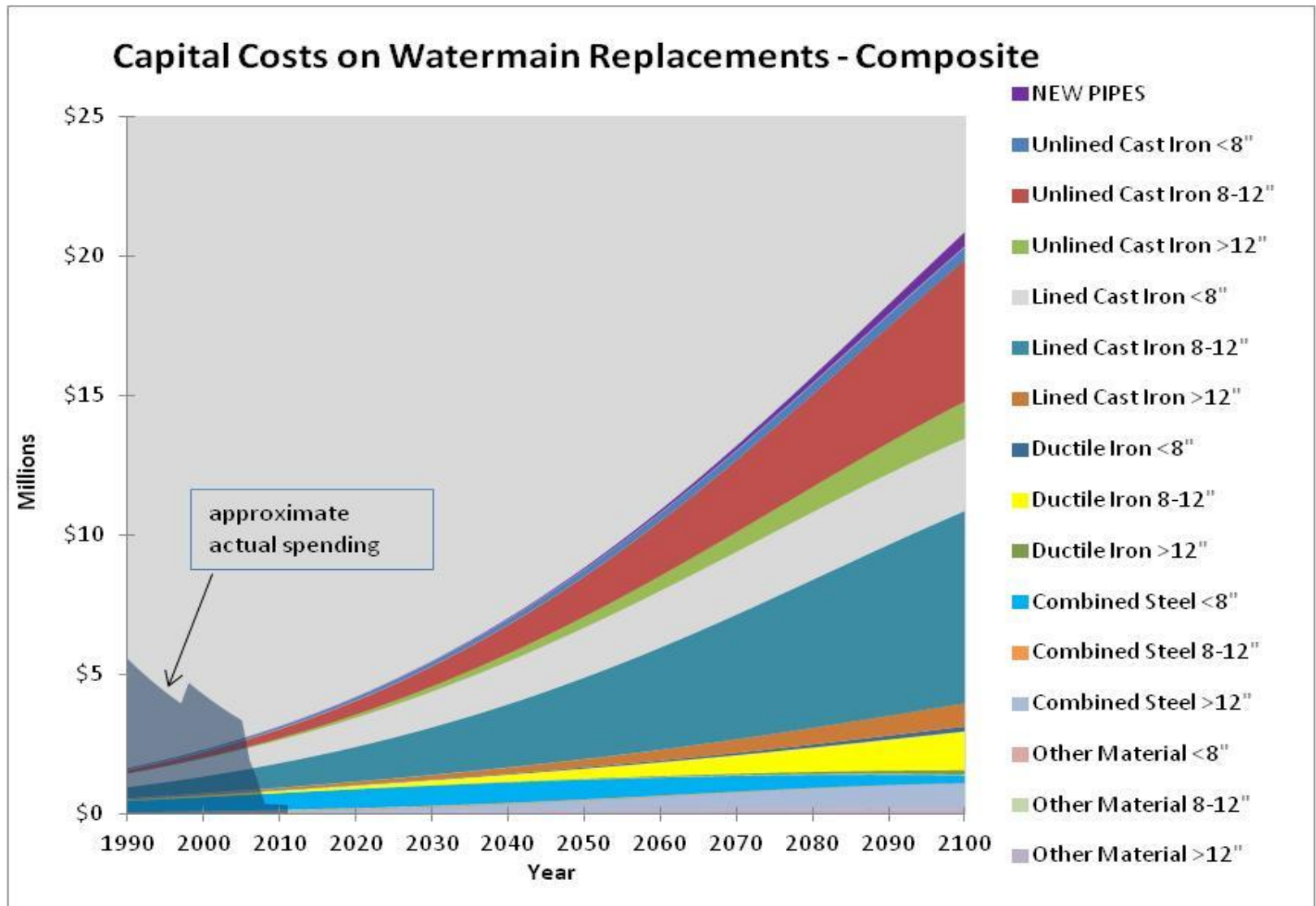
Distributed Assets - Watermains



Data-Driven Decision Making



Replacement & Renewal Strategy – Long Term



Other Future Considerations

- **Seismic planning**
- **Climate change / resiliency**
 - Third round of studies underway since 2000

Next Steps

- **We're working towards a 2019 Water System Plan update**
- **It will contain our CIP projections for the next 20+ years**

Questions?

Drainage & Wastewater Assets (1)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Wastewater	Wastewater pipe			Updated 2015
	Pump stations and force mains			Updated 2016
	CSO facilities			Starting 2017
	CSO outfalls			Starting 2017
Drainage	Catch basins			Starting 2017
	Stormwater ponds			Starting 2017
	Ditches and culverts			Starting 2017
	GSI, bioretention			Updated 2016
	Stormwater storage & water quality			Not started
	Drainage pipe			Not started

Drainage & Wastewater Assets (2)

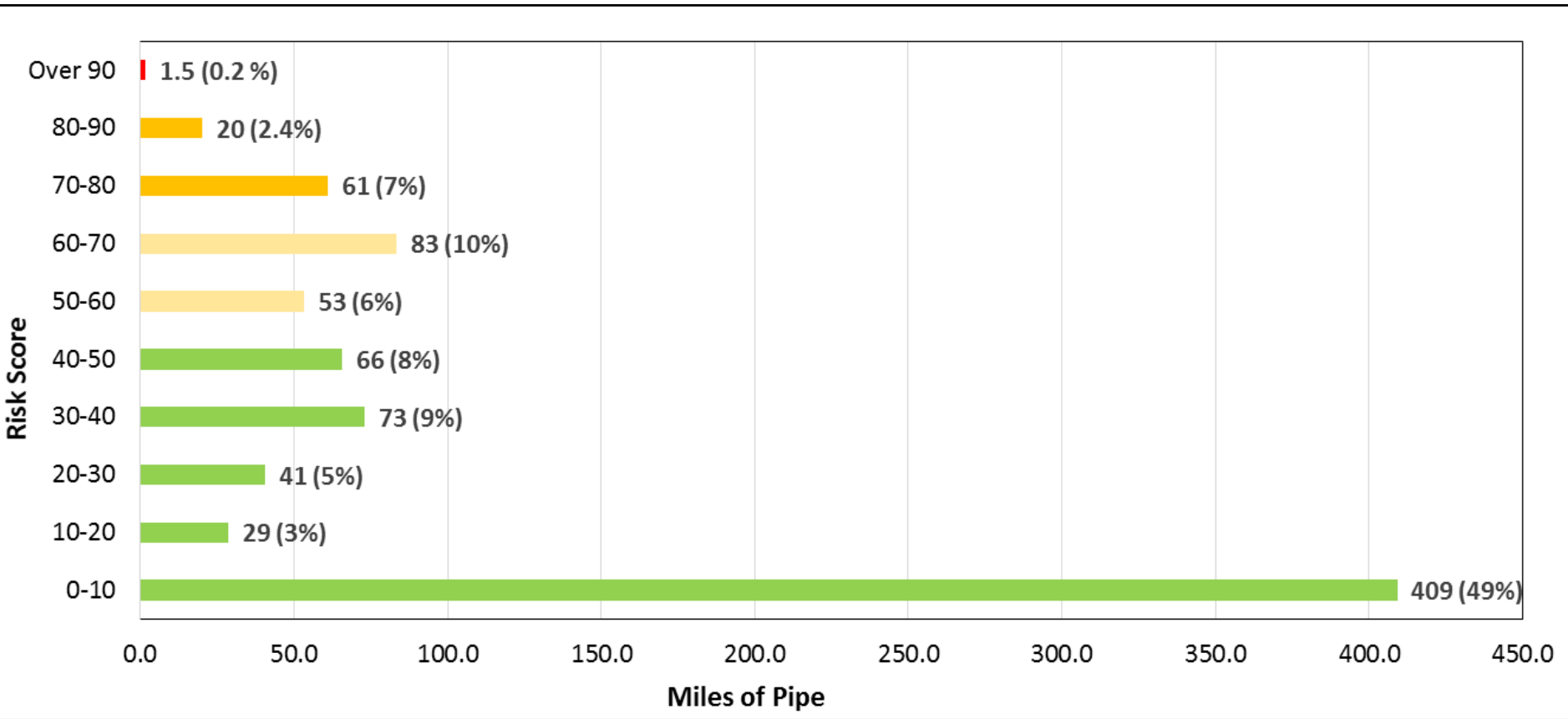
Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Urban Ecosystems	Stream culverts			Started 2017
	Creeks, floodplains and wetlands			Not started
	SPU managed forest areas			Not started
	SPU facility landscapes			Not started
Facilities	Operations complexes, grit and decant facilities			Completed 2016

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Baseline - \$132M
Action Plan 7 - \$26M

Wastewater Pipe Risk Profile



In the last 10 years we've inspected about half of the wastewater system (1,400 miles). About 25% of pipes inspected fall into high risk category based on condition as shown above.

Drainage & Wastewater Assets

Rehabilitation Method	Estimated cost/foot	Pipe rehabilitated with \$1M (ft)
<i>Lining by SPU crew</i>	<\$233	>4,286
Spot repair by Contractor	\$233	4,286
Spot repair by SPU crew	\$5,000	200
Spot repair by Contractor	\$26,667	38
Full line replacement by Contractor	\$1,600	625

Action Plan 5

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Wastewater	Wastewater pipe			Updated 2015
	Pump stations and force mains			Updated 2016
	CSO facilities			Starting 2017
	CSO outfalls			Starting 2017
Drainage	Baseline - \$49M Action Plan 8 - \$10M			Starting 2017
				Starting 2017
	Ditches and culverts			Starting 2017
	GSI, bioretention			Updated 2016
	Stormwater storage & water quality			Not started
	Drainage pipe			Not started

Drainage & Wastewater Assets (2)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
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Facilities	Operations complexes, grit and decant facilities			Completed 2016

Action Plan 10

Conclusions

By 2023, significant steps forward in the action plan areas, which are our biggest gaps

- Wastewater pipe
- Waster pump stations and force mains
- Facilities

In addition, by 2020, we will have completed Asset Management Plans for all major asset classes, and will have a better sense of any other gaps. New gaps will not be as significant as those above.

Conclusions

In addition, by 2023 we will have completed

- Wastewater system analysis focused on sewer capacity and sewer overflows
- Drainage system analysis focused on flooding and water quality impacts
- Updated plan for controlling combined sewer overflows

AND an integrated planning effort focused on bringing these elements together for the short (3 year) and long term (50 year). This will include a 10+ year CIP.

Questions?